

What is claimed is:

- See A.17*
1. An interface to core system software in a user terminal, comprising:
a computer readable medium having computer program code; and
means for executing said computer program code to provide at least one application program interface (API) to enable middleware that mediates between an application program and the core system software to access a function of the terminal.
 2. The interface of claim 1, wherein:
the function of the terminal comprises acquiring a service.
 3. The interface of claim 1, wherein:
the function of the terminal comprises acquiring a service by tuning a specified virtual channel number or source ID using a specified service path.
 4. The interface of claim 1, wherein:
the function of the terminal comprises determining the status of a service.
 5. The interface of claim 1, wherein:
the function of the terminal comprises requesting status information regarding a currently-tuned primary service on a specified service path.
 6. The interface of claim 1, wherein:
the function of the terminal comprises registering a client for unsolicited service status updates for a

currently tuned primary service on a specified service path.

7. The interface of claim 1, wherein:
the function of the terminal comprises canceling a registration for service status updates that was previously set up.

8. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a summary of current Virtual Channel Table information for all defined virtual channels.

9. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a summary of current Virtual Channel Table information and characteristics for all defined DOCSIS downstream channels.

10. The interface of claim 1, wherein:
the function of the terminal comprises adding a service component of a specified type to a primary service on a specified service path.

11. The interface of claim 1, wherein:
the function of the terminal comprises deselecting a specified component from a primary service on a specified service path.

12. The interface of claim 1, wherein:
the function of the terminal comprises selecting a service component that carries particular multicast datagrams.

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14. The interface of claim 1, wherein:
the function of the terminal comprises deselecting
a specified stream component that was previously
selected.

16. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

17. The interface of claim 1, wherein:
the function of the terminal comprises receiving
data or text from a specified background service
connection that was previously acquired.

18. The interface of claim 1, wherein:
the function of the terminal comprises obtaining at
least one virtual channel number associated with a
specified source identifier

19. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a source identifier associated with a specified virtual channel number.

20. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a list of pending changes to a Virtual Channel Table.

21. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a Defined Channel Bit Map (DCBM) for a specified channel type that represents currently defined virtual channels/services.

22. The interface of claim 1, wherein:
the function of the terminal comprises identifying a next audio and/or video component for a service.

23. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a virtual channel number associated with a specified application identifier.

24. The interface of claim 1, wherein:
the function of the terminal comprises obtaining an application identifier associated with a specified Virtual Channel Number.

25. The interface of claim 1, wherein:
the function of the terminal comprises obtaining an application identifier associated with a specified

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source name string.

26. The interface of claim 1, wherein:
the function of the terminal comprises obtaining a
source name string identifier associated with a
specified application ID.

27. The interface of claim 1, wherein:
the function of the terminal comprises managing a
configuration of the terminal.

28. The interface of claim 1, wherein:
the function of the terminal comprises obtaining at
least one of:
current terminal configuration information;
Electronic Program Guide (EPG) information;
current converter system status; and
a system timestamp with local time.

29. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:
registering a client for unsolicited system
timestamp updates; and
canceling a registration for system timestamp
updates.

30. The interface of claim 1, wherein:
the function of the terminal comprises setting an
output channel number for RF modulator hardware.

31. The interface of claim 1, wherein:
the function of the terminal comprises setting the

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providing a Cable Modem's public key to a DOCSIS Driver;

generating a Key Encryption Key (KEK) based on a decrypted Authorization Key;

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    authenticating a Key Request message, and return an
upstream hashed-based message authentication code (HMAC)
keyed message digest to a DOCSIS Driver;

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validating a downstream hashed-based message authentication code (HMAC) using a downstream HMAC key; and

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    decrypting an encrypted Traffic Encryption Key
    (TEK) using a Key Encryption Key (KEK), and returning
    the TEK to a DOCSIS Driver.

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39. The interface of claim 1, wherein:
the function of the terminal comprises managing
objects that are downloaded by the terminal.

40. The interface of claim 1, wherein:
the function of the terminal comprises
searching for a currently loaded object and
returning information thereof.

41. The interface of claim 1, wherein:
the function of the terminal comprises searching
for a next currently loaded object and returning

information thereof.

42. The interface of claim 1, wherein:
the function of the terminal comprises registering
as a manager for managed objects.

43. The interface of claim 1, wherein:
the function of the terminal comprises creating and
writing an object in one atomic operation.

44. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

preparing for an object to be written to memory,
including allocating space the object;
writing a portion of an object to memory; and
terminating writing to object memory for a
specified object.

45. The interface of claim 1, wherein:
the function of the terminal comprises obtaining
contents of a specified object.

46. The interface of claim 1, wherein:
the function of the terminal comprises removing at
least one object from memory.

47. The interface of claim 1, wherein:
the function of the terminal comprises providing an
object manager for receiving callbacks from a downloader
regarding activity that occurs in the terminal related
to downloaded objects.

48. The interface of claim 1, wherein:
the function of the terminal comprises purchasing a
program.

49. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

requesting that a program on a currently-tuned
Virtual Channel Number be purchased;

requesting that a purchase of a specified program
be canceled;

requesting that a program package indicated by a
package name on a currently tuned Virtual Channel Number
be purchased;

requesting that a purchase of a specified packaged
service be canceled; and

requesting information regarding all pending
purchases

50. The interface of claim 1, wherein:
the function of the terminal comprises enabling a
user of the terminal, following system start-up, to
refresh a purchase callback function pointer for a
specified program or package purchase.

51. The interface of claim 1, wherein:
the function of the terminal comprises setting
and/or checking a password.

52. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

setting the password for an indicated time slot;

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53. The interface of claim 1, wherein:
the function of the terminal comprises initializing
the at least one application program interface (API).

55. The interface of claim 1, wherein:
the function of the terminal comprises configuring
a platform of the terminal.

57. The interface of claim 1, wherein:
the function of the terminal comprises
returning the ENDIANness of a CPU of the terminal
when the terminal is initialized.

58. The interface of claim 1, wherein:
the function of the terminal comprises
checking a validity of a non-volatile memory
(NVMEM) of the terminal by returning the starting
address, size and validity of the NVMEM

59. The interface of claim 1, wherein:
the function of the terminal comprises retrieving
information about the terminal including at least one of
the Platform ID, Manufacturer, Family and Model
information.

60. The interface of claim 1, wherein:
the function of the terminal comprises
retrieving the processor, bridge type and crystal
speeds for the terminal,

61. The interface of claim 1, wherein:
the function of the terminal comprises retrieving
MAC addresses for interfaces of at least one of DOCSIS,
Ethernet, IEEE 1394, and USB components, and the
terminal itself.

62. The interface of claim 1, wherein:
the function of the terminal comprises retrieving
at least one of:
memory size information for memory components of
the terminal;
at least one of cable modem and DOCSIS option
information;
the type of output channel in use by the terminal;
information regarding an IEEE 1394 interface
installed in the terminal;
information regarding an Ethernet interface
installed in the terminal;
information regarding a parallel port installed in
the terminal;
information regarding the type of hard drive

currently installed in the terminal; and
information regarding the type of platform and the
version of the platform currently running in the
terminal.

63. The interface of claim 1, wherein:
the function of the terminal comprises diagnosing
errors at the terminal.

64. The interface of claim 1, wherein:
the function of the terminal comprises indicating
the type of error when an error has occurred.

65. The interface of claim 1, wherein:
the function of the terminal comprises
providing diagnostic information regarding
Interactive Pay-Per-View purchases at the terminal.

66. The interface of claim 1, wherein:
the function of the terminal comprises providing
diagnostic information regarding an output port or re-
modulated port of the terminal.

67. The interface of claim 1, wherein:
the function of the terminal comprises indicating
at least one of:
the last reset time, the type of reset that
occurred and the last Fatal Error Log entry;
a Virtual Channel Table ID for the virtual channel
table that is resident in the terminal;
a status of out-of-band stream components;
a status of a current in-band multiplex;
a unit addresses assigned to the terminal;

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a status of the last attempted primary service acquisition;

a renewable security status;

a transmission status of a RF modem installed in the terminal;

a status for firmware loaded into flash memory and all versions of non-volatile code that are installed in the terminal, and

a memory configuration for the terminal.

68. The interface of claim 1, wherein:

the function of the terminal comprises retrieving DOCSIS diagnostic information for On Screen Diagnostics or reportback.

69. The interface of claim 1, wherein:

the function of the terminal comprises returning a status of at least one of:

a USB port;

any installed devices;

an IEEE 1394 port;

an Ethernet port;

a parallel port;

an infra-red (IR) transmitter;

an IR keyboard;

an IR remote control;

a smart card;

a hard drive; and

a graphics system.

70. The interface of claim 1, wherein:

the function of the terminal comprises indicating whether a network adapter is available,

and associated parameters and/or status there

71. The interface of claim 1, wherein:
the function of the terminal comprises
returning a Resource Authorization statu
resource in the terminal.

72. The interface of claim 1, wherein:
the function of the terminal comprises r
lock status of MPEG video and audio streams,
a Program Clock Reference (PCR).

73. The interface of claim 1, wherein:
the function of the terminal comprises co
an audio output of the terminal.

74. The interface of claim 1, wherein:
the function of the terminal comprises se
terminal's Audio Output Mode to one of: Surrou
Stereo, and Mono.

75. The interface of claim 1, wherein:
the function of the terminal comprises al
client to at least one of:
set an Audio Control Volume Mode;
enable or disable Audio Loop Thru to outp
external audio source on baseband connectors,
the external audio source, respectively;
set an Audio Compression Dynamic Range Co
Mode to one of: No Compression, Light Compres
Heavy Compression;
select a Secondary Audio Program (SAP) Au
within an Analog Service, if available;

71. The interface of claim 1, wherein:
the function of the terminal comprises
returning a Resource Authorization status for each
resource in the terminal.

72. The interface of claim 1, wherein:
the function of the terminal comprises returning a
lock status of MPEG video and audio streams, as well as
a Program Clock Reference (PCR).

73. The interface of claim 1, wherein:
the function of the terminal comprises controlling
an audio output of the terminal.

74. The interface of claim 1, wherein:
the function of the terminal comprises setting the
terminal's Audio Output Mode to one of: Surround,
Stereo, and Mono.

75. The interface of claim 1, wherein:
the function of the terminal comprises allowing a
client to at least one of:

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set an Audio Control Volume Mode;
enable or disable Audio Loop Thru to output an
external audio source on baseband connectors, or mute
the external audio source, respectively;
set an Audio Compression Dynamic Range Compression
Mode to one of: No Compression, Light Compression and
Heavy Compression;

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select a Secondary Audio Program (SAP) Audio Source within an Analog Service, if available;

select the terminal's Digital Audio Output path instead of Analog Audio Output paths;

adjust the terminal's master audio volume, where the terminal adjusts left and right channel values;

adjust the terminal's master audio volume, including separate left and right channel values;

adjust the relative volume of TV audio sources, where the terminal adjusts left and right channel values;

adjust the relative volume of TV audio sources, including adjusts left and right channel values;

adjust the relative volume of local audio sources, where the terminal adjusts left and right channel outputs; and

adjust the relative volume of local audio sources, including left and right channel outputs.

76. The interface of claim 1, wherein:
the function of the terminal comprises selecting at least one of:

a Master Audio Mute mode on or off;
a TV Audio Mute mode on or off; and
a Local Audio Mute mode on or off.

77. The interface of claim 1, wherein:
the function of the terminal comprises providing a single API call to report an Audio Status.

78. The interface of claim 1, wherein:
the function of the terminal comprises controlling a video output of the terminal.

79. The interface of claim 1, wherein:

the function of the terminal comprises selecting a TV Video Blank mode on or off.

80. The interface of claim 1, wherein: the function of the terminal comprises controlling how a TV video is blanked by the terminal.

81. The interface of claim 1, wherein: the function of the terminal comprises providing a single API call to report a Video Status.

82. The interface of claim 1, wherein: the function of the terminal comprises authorizing a resource of the terminal.

83. The interface of claim 1, wherein: the function of the terminal comprises obtaining a permission status of a resource.

84. The interface of claim 1, wherein: the function of the terminal comprises at least one of:

registering a client to receive a notification when the authorization status of a resource changes; and
canceling a previously set up registration to receive a notification when the authorization status of a resource changes

85. The interface of claim 1, wherein: the function of the terminal comprises providing a high definition passthrough.

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86. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

obtaining a block of protected flash memory data
containing DTCP data;
writing a block of NVRAM data containing DTCP data;
and
reading a block of NVRAM data containing DTCP data.

87. The interface of claim 1, wherein:
the function of the terminal comprises at least one
of:

providing an alphanumeric description of the
terminal on an IEEE 1394 bus;
defining the current state of a Digital Television
(DTV) connection; and
obtaining an IEEE 1394 5C System Renewability
Message.

88. The interface of claim 1, wherein:
the terminal comprises a television terminal.

89. A method for providing an interface to core
system software in a user terminal, comprising the steps
of:

providing a computer readable medium having
computer program code; and
executing said computer program code to provide at
least one application program interface (API) to enable
middleware that mediates between an application program
and the core system software to access a function of the
terminal.

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